

A high-level monthly briefing on operations and activities at the U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory – Home of Science and Engineering Solutions. Work at the lab supports the Department's business lines of energy security, national security, environmental quality and science.

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## ■ ENERGY SECURITY – INEEL Supports Wind Power Assessments

Since becoming involved in the U.S. Department of Energy's *Wind Powering America* program in 2001, the Idaho State Wind Working Group – consisting of the INEEL, the Energy Division of the Idaho Department of Water Resources and others – has installed 23 anemometers at promising wind sites on state and private lands and on Shoshone-Paiute and Shoshone-Bannock Tribal lands at Duck Valley and Fort Hall. These anemometers, on loan to four sponsors from the DOE or purchased by Idaho Power, measure wind speeds and provide data to those interested in promoting and developing wind energy in Idaho. The data show that some Idaho sites rank within the top 10 percent of sites around the country for highest wind speed averages. The INEEL collects and processes wind speed data, and makes it available to the public at the following website: <http://energy.inel.gov/powersystems/wind/>.

## ■ ENVIRONMENTAL QUALITY – Enzyme Could Banish Industrial Bleaching Waste Worries

Taken from a microbe that thrives in the depths of a Yellowstone National Park hot springs pool, a newly discovered enzyme could lead to an environmentally benign treatment for hydrogen peroxide bleaching wastewater. INEEL chemical engineer Vicki Thompson and biologist William Apel discovered that an enzyme from a *Thermus brockianus* microbe flourishes in the high temperature and high pH (base or alkaline) wastewater from hydrogen peroxide bleaching. The *T. brockianus* enzyme converted hydrogen peroxide into simple water and oxygen for up to 360 hours under these conditions – compared to a paltry 15 to 20 minutes for other, commercially available catalases.

## ■ NATIONAL SECURITY – Scientists Work on Biological Threat Detection Technique

INEEL molecular biologists Frank Roberto and Deborah Newby are developing a quick, safe and accurate method of detecting brucellosis in the field. The technique is a DNA-based field assay that uses a portable real-time polymerase chain reaction system. The ability to conduct speedy, reliable evaluations of domestic cattle, sheep, pigs and goats, as well as wild bison and elk is critically important to ranchers and federal wildlife officials trying to prevent the disease's spread. Beyond answering the question of whether brucellosis in wild animals can lead to infection of domestic livestock, it's thought the INEEL research could lead to the development of sensitive DNA-based assays supporting a broad range of national and homeland security requirements for precise and timely identification of biological warfare and bioterrorism agents.

## ■ SCIENCE – Lab Sharpens Nuclear Science Focus

The INEEL has created an additional directorate in response to the Laboratory's growing nuclear energy mission. The new group, Nuclear Science and Engineering, resides within the INEEL's Nuclear Energy division. Headed by Kathryn McCarthy, Ph.D., the group will play a key role in conducting research and development in nuclear systems analysis and design, fusion, reactor and radiation physics, thermal fluids, and nuclear fuels and materials. McCarthy came to the INEEL in 1991 with a doctorate in nuclear engineering from the University of California, Los Angeles. She has worked at the Kurchatov Institute in Moscow, Russia, the Efremov Institute in Leningrad and the Latvian Academy of Sciences in Riga, has participated in numerous national and international fusion energy conferences, and has authored or co-authored more than four dozen journal articles.

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